

AMENDMENTS TO THE CLAIMS

In the claims:

Claims 1-4 and 7 were the subject of the present Office Action. Please cancel claim 4 without prejudice and amend claims 1 and 3 as shown in the following listing of claims, which will replace all prior versions and listings of claims in the application.

Listing of claims:

1. (currently amended) An isolated or purified enzyme exhibiting nicotianamine synthase activity, wherein the enzyme is selected from:

(A) the polypeptide having an amino acid sequence of SEQ ID NO: 1; or

(B) a polypeptide having more than 50% identity with an amino acid sequence of SEQ ID NO: 1 and comprising at least one consensus sequence of SEQ ID NO: 1 that is:

(1) ~~25LPXLSPSPXVDRLFTXLVXACVPXSPVDVTKL₅₆~~ (SEQ ID NO: 23)

(2) ~~67LIRLCSXAEGXLEAHY₈₂~~ (SEQ ID NO: 24)

(3) ~~92PLDHLGXFPY₁₀₁~~ (SEQ ID NO: 25)

(4) ~~128VAFXGSGPLPFSS₁₄₀~~ (SEQ ID NO: 26)

(5) ~~199DVVFLAALVGM₂₀₉~~ (SEQ ID NO: 27)

(6) ~~253RGGFXVLAVXHP₂₆₄~~ (SEQ ID NO: 28)

wherein X is variable amino acid residue

and comprising all of the conserved amino acid residues of SEQ ID NO: 1 that is:

~~L(11), K(14), I(15), I(22), I(25), I(28), P(30), I(37), F(38), I(41), V(42), C(45), P(47),
D(52), V(53), Q(61), M(63), R(64), I(67), I(68), C(71), A(74), E(75), I(78), E(79), H(81),
L(86), D(90), P(92), I(93), H(95), I(96), F(99), P(100), Y(101), N(104), Y(105), I(108),
L(111), E(112), I(115), L(116), A(129), F(130), G(132), S(133), G(134), P(135), I(136),~~

~~P(137), S(140), I(143), A(144), H(147), I(148), F(153), N(155), A(162), N(163), A(166),
L(169), R(180), M(181), F(183), T(185), L(195), D(199), V(200), V(201), F(202), L(203),
A(204), A(205), V(207), G(208), M(209), K(214), H(220), I(221), H(224), M(225),
G(228), A(229), I(231), R(239), F(241), L(242), Y(243), P(244), V(246), G(255), F(256),
V(258), I(259), V(261), H(263), P(264), V(268), N(270), S(271), K(277) (SEQ ID NO:
29).~~

2. (original) The enzyme according to claim 1, wherein said enzyme is isolated from barley.
3. (currently amended) The enzyme according to claim 1, wherein the enzyme comprises the consensus amino acid sequence of ~~¹⁹⁹DVVFLAALVGM₂₀₉~~ (SEQ ID NO: 27).
4. (canceled)
5. (canceled)
6. (original) The enzyme according to claim 1, wherein said enzyme is isolated from *Oryza sativa*.
7. (canceled)
8. (withdrawn) A gene encoding amino acid sequence of nicotianamine synthase according to any one of claims 1-7.
9. (withdrawn) The gene according to claim 8 wherein said gene is cDNA.
10. (withdrawn) The gene according to claim 8 or 9 comprising having base sequence shown in

SEQ ID NO: 2, 4, 6, 8, 10, 12 or 14.

11. (withdrawn) The gene according to claim 8 or 9 comprising having base sequence shown in SEQ ID NO: 18, 20 or 22.

12. (withdrawn) A vector comprising containing gene according to any one of claims 8 – 11.

13. (withdrawn) The vector according to claim 12 wherein said vector is an expression vector.

14. (withdrawn) A transformant wherein said transformant is transformed by the vector according to claim 12 or 13.

15. (withdrawn) The transformant according to claim 14 wherein the foreign gene is a gene having base sequence shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, or 22.

16. (withdrawn) The transformant according to claim 14 or 15 wherein the host is bacteria.

17. (withdrawn) The transformant according to claim 14 or 15 wherein the host is higher bacteria.

18. (withdrawn) A process for production of nicotianamine comprising using the transformant according to any one of claims 14 – 17.

19. (withdrawn) A plant wherein the gene according to any one of claims 8 – 10 is introduced.

20. (withdrawn) The plant according to claim 19 wherein said plant is seed.

21. (withdrawn) A fruit obtained by growing the plant according to claim 19 or 20.
22. (withdrawn) An antibody against nicotianamine synthase according to any one of claims 1 – 7.
23. (withdrawn) The antibody according to claim 22 wherein said antibody is polyclonal antibody.
24. (withdrawn) The antibody according to claim 22 wherein said antibody is monoclonal antibody.
25. (withdrawn) A method for extraction of nicotianamine synthase comprising extracting the said enzyme in the presence of thiol protease inhibitor at the extraction of nicotianamine synthase from the plant.
26. (withdrawn) The method according to claim 25 wherein the thiol protease inhibitor is E-64.